

Att'y Ref. No.: 003-126

U.S. App. No.: 10/808,490

REMARKS

Favorable reconsideration, reexamination, and allowance of the present patent application are respectfully requested in view of the foregoing amendments and the following remarks.

Allowable Subject Matter

Applicant gratefully acknowledges the indication, at page 17 of the Office Action, that the subject matters of Claims 13 and 15 are free of the prior art.

Information Disclosure Statement (IDS)

At page 2 of the Office Action, the IDS filed September 14, 2004 was objected to for allegedly failing to satisfy 37 C.F.R. § 1.98. Applicant respectfully requests reconsideration of this objection, and full consideration of the documents cited in the September 14, 2004 IDS.

At page 3 of the IPER: "Neuheit" is German for "Novelty", as indicated by the parenthetically stated capital letter "N"; "Erfinderische Tätigkeit" is German for "Inventive Step", as indicated by the parenthetically stated capital letters "IS"; "Ja" is German for "Yes"; "Nein" is German for "No"; and "Ansprüche" is German for "Claims". Thus, the IPER found that Claims 1-9 met the requirements of PCT Articles 33(2)-(3).

For at least the foregoing reasons, Applicant respectfully submits that the September 14, 2004 IDS fully complied with 37 C.F.R. §§ 1.97, 1.98, and therefore respectfully requests withdrawal of the objection thereto, consideration of all of the documents cited therein, and return to Applicant of a copy of the Examiner-initialed PTO-1449.

Objection to the Oath/Declaration

At page 2 of the Office Action, the Oath/Declaration was alleged to be defective, and a new Declaration was required, as the original Declaration referenced the parent International application, PCT/IB02/03862. Applicant respectfully requests reconsideration.

This application is a 'PCT-Bypass' application, *i.e.*, is a continuation of, and claims priority under 35 U.S.C. § 120 to, the parent International application. By way of the

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Preliminary Amendment filed concurrently with this application, Applicants inserted the appropriate reference to the prior application, required by 37 C.F.R. § 1.78. While the original Declaration in this application lists the parent PCT application under the section claiming priority under section 119, this is merely a typographical error. Plainly, the claim for priority to the PCT parent under section 119 should merely be denied, while the claim for priority under section 120 granted, rather than requiring the inventors to execute a fresh Declaration.

For at least the forgoing reason, Applicant respectfully submits that the Declaration is not objectionable, and therefore respectfully requests withdrawal of the objection thereto.

Objection to the Drawings

At page 2 of the Office Action, the drawings were objected to under 37 C.F.R. § 1.84 because the drawings allegedly fail to show every feature of the invention specified in the claims. Applicant respectfully requests reconsideration of this objection.

Applicant and the undersigned have carefully reviewed the objections to the drawings and the specification, and have provided, by way of the foregoing amendments, another express statement that the structures 7, 8 illustrated in the drawing figures can be platforms and/or other rotary machine components, including distance pieces and heat insulation segments. Thus, Figs. 2-6 illustrate the various alternative embodiments as applied generally to the various machine components to which the invention applies, as described elsewhere in the application.

Concerning the brazed or soldered connections, it appears that the Office Action requests that the drawings include an additional structure indicating brazing or soldering material. So as to not obscure the present invention, Applicant has elected to slightly reword Claim 2 so as to not require the drawings to illustrate such additional material.

No new matter has been entered.

Because Applicant has elected to address the alleged deficiencies in the drawings by revising other parts of the application, Applicant respectfully submits that submission of Replacement Sheets is not necessary.

For at least the foregoing reasons, Applicant respectfully submits that the drawings fully

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comply with 37 C.F.R. § 1.84, and therefore respectfully requests withdrawal of the objection thereto.

Objection to the Abstract

At page 4 of the Office Action, the Abstract was objected to because it includes the phrase "The invention is characterized in that", and because the last line "(Fig. 1a)" should be deleted. Applicant respectfully requests reconsideration of this objection.

By way of the foregoing amendment to the Abstract, the objectionable passages have been deleted.

For at least the foregoing reasons, Applicant respectfully submits that the Abstract is not objectionable, and therefore respectfully requests withdrawal of the objection thereto.

Objection to the Disclosure

At page 4 of the Office Action, the disclosure as a whole was objected to because the reference to the preamble of Claim 1 at page 1, line 7 is objectionable, and the passage appearing at page 10, lines 12-15, is allegedly unclear, the Office Action questioning how vane roots, which are stationary, could protrude into a rotor, which is rotating. Applicant respectfully requests reconsideration of this objection.

By way of the foregoing amendments, Applicant has deleted the references to the claims throughout the specification, and has slightly revised the text at page 10 to reflect that guide vane roots extend into their respective component, a stator.

For at least the foregoing reasons, Applicant respectfully submits that the disclosure as a whole is not objectionable, and therefore respectfully requests withdrawal of the objection thereto.

Objection to the Specification

At page 4 of the Office Action, the Specification was objected to because it allegedly fails to provide proper antecedent basis for the claimed subject matter. Applicant respectfully

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requests reconsideration of this objection.

By way of the foregoing amendments, Applicant has 'back-inserted' into the specification the claim phrases which were the focus of this objection.

For at least the foregoing reasons, Applicant respectfully submits that the Specification is not objectionable, and therefore respectfully requests withdrawal of the objection thereto.

Rejection under 35 U.S.C. § 112, first paragraph

In the Office Action, beginning at page 5, Claim 7 was rejected under 35 U.S.C. § 112, first paragraph, as reciting subject matter that allegedly fails to comply with the written description requirement. Applicant respectfully requests reconsideration of this rejection.

Applicant first notes that the claims pending as of the filing date of this application, as acknowledged at the top of page 2 of the Office Action, are those presented in a Preliminary Amendment filed concurrently with the rest of the application papers. By way of the foregoing amendments, Applicant has 'back-inserted' the exact subject matter from Claim 7 into the specification at page 8, last paragraph.

M.P.E.P. § 608.04(b) plainly addresses the situation where, as in this application, a Preliminary Amendment was filed concurrently with the original application:

For applications filed prior to September 21, 2004, a preliminary amendment that was present on the filing date of an application may be considered a part of the original disclosure if it was referred to in a first filed oath or declaration in compliance with 37 CFR 1.63. If the preliminary amendment was not referred to in the oath or declaration, applicant will be required to submit a supplemental oath or declaration under 37 CFR 1.67 referring to both the application and the preliminary amendment filed with the original application. A surcharge under 37 CFR 1.16(f) will also be required unless it has been previously paid.

Thus, instead of alleging that the Preliminary Amendment, including Claim 7, contained new matter relative to the rest of the application materials, the Office Action should have required a Supplemental Declaration, as Claim 7 is part of the original application. In this regard, as the Office Action made no such requirement, Applicant has not included a fresh Declaration, but would be glad to provide one upon formal request.

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For at least the foregoing reasons, Applicant respectfully submits that Claim 7 fully complies with 35 U.S.C. § 112, first paragraph, and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 112, second paragraph

In the Office Action, beginning at page 6, Claims 1-17 were rejected under 35 U.S.C. § 112, second paragraph, as reciting subject matters that allegedly are indefinite. Applicant respectfully requests reconsideration of this rejection.

Applicant and the undersigned have carefully reviewed all of the pending claims in light of the carefully worded comments in the rejections. Concerning Claim 1, Applicant acknowledges that it is indeed complex, and that there may be other ways to recite the same subject matter; however, a close reading of the claim, Applicant respectfully submits, reveals that the scope of the claim is quite clear. The Office Action specifically accuses the use of the word "or" throughout the claims as a source of the alleged ambiguity, alleging that the resulting permutations render the scopes of the claims unclear. While the scopes of several of the claims include several different alternative configurations, their presence does not render the claims indefinite, but rather are expressions of the breadth of Applicants' invention. Stated somewhat differently, complex broad claims are not, *ipso facto*, indefinite claims. Applicant notes that M.P.E.P. § 2173.05(h) specifically sanctions the use of the word "or" in patent claims.

For at least the foregoing reasons, Applicant respectfully submits that Claims 1-17 fully comply with 35 U.S.C. § 112, second paragraph, and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 102

In the Office Action, beginning at page 7, Claims 1-5, 7-8, 10-12 and 16-17 were rejected under 35 U.S.C. § 102, as reciting subject matters that allegedly are anticipated by U.S. Patent No. 6,312,218, issued to Beeck *et al.* ("Beeck '218"). Applicant respectfully requests reconsideration of this rejection.

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Applicant first notes that the Office Action cites to 35 U.S.C. § 102(b) as the statutory basis for rejecting the claims over *Beeck* '218. This application is a continuation of, and claims priority under 35 U.S.C. § 120 to, International application number PCT/IB02/03862, filed 19 September 2002, and therefore the effective filing date of this application in the U.S. is 19 September 2002. *Beeck* '218 was filed in the U.S. on 12 October 1999, and was granted on 6 November 2001, less than one year before the filing date of this application. Therefore, *Beeck* '218 does not qualify as prior art under section 102(b), but rather under 35 U.S.C. § 102(e), against this application.

This application describes numerous embodiments of seals between various components of a machine, e.g., a rotary flow machine, e.g., an axial turbomachine. As described throughout this application, and illustrated in the several drawing figures, a gap 5 between two such components 7, 8, 21, 31 changes between cold and hot operating states of the machine. In order to seal the gaps between these components, in order to better control fluid leakage out through these gaps, a sealing element 4 is provided on the component which extends from the surface thereof. Thus, instead of needing to very tightly assemble the components of the machine, as had been the prior practice, which lead to component failure during use, the present invention permits the components to be more loosely assembled, which still effectively sealing the gaps between the components. When hot, the components expand due to thermal expansion of the components' materials, making the gap between the components smaller than when the components are cold.

Claim 1 relates to a seal arrangement having a combination of elements including, *inter alia*, a sealing element firmly connected to at least one platform and having a thickness protruding from a surface of the at least one platform, and at least two adjacent platforms or a platform and a component, when directly adjoining the platform, enclose a cold gap s_c in a cold condition and a hot gap s_w in a hot condition during operation of a rotary flow machine.

The prior art, including *Beeck* '218, fails to identically disclose or describe combinations of elements as recited in the pending claims.

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Beeck '218 describes a slightly older solution to a similar problem as that addressed by the present invention. *Beeck '218* describes at column 2, lines 17-21, that the fine grained structure of the intermetallic fibres has a porosity, which can be specifically set and associated with a suitable elasticity by selection of the intermetallic fibres used during the production of that "felt-like" material. At column 2, lines 4-10, *Beeck '218* states that the felt-like material consists of pressed-together sintered intermetallic fibres which are inserted into the gaps of two neighboring guide or moving-blade roots for reducing the gas exchange.

Different from *Beeck '218*'s idea of using intermetallic fibres which are woven to a mesh, an aspect of this application is the use of a plastically deformable material, e.g., a kind of metal foam or a porous metallic coating (see, e.g., Claim 5). The solutions described and claims in this application, however, are very different from the solutions described in *Beeck '218*. One advantage of using a metal foam or a porous metallic coating is the relative easy of producing and fitting the blade arrangement together. No further work has to be done by inserting any intermetallic felt material between gaps after the blades are arranged in blade rows, as would be required by the solution described in *Beeck '218*. The felt-like material of *Beeck '218* fills the gaps between the components, and therefore there is no cold or hot gap between the components as required in the combinations of the claims, contrary to the assertion in the Office Action. The components of *Beeck '218*'s machine between which his felt-like material is inserted will thermally expand; but the gap is always filled by the felt-like material.

Furthermore, intermetallic felt material is a very porous material, which tends to break, especially at outer surface regions. Therefore, the mounting process of the blades, which are covered at special side flanks with intermetallic felt material, has to be carried out very carefully. During installation of the blades and vanes it is unavoidable that the structure of the intermetallic felt material is easily damaged, so that the sealing function deteriorates. Instead of using intermetallic felt material, one exemplary embodiment of the present invention proposes to use metallic foam or a sintered metallic layer, which provides more stability and robustness so that vanes, blades, or other components being combined with such material can be handled with less accuracy and without suffering any damage at the sealing arrangement.

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Concerning Claim 4, Applicant notes that intermetallic fibers material cannot be placed onto a surface of a flank of a vane or blade in way of flame spraying, galvanic precipitation, or by plating. For example, if one was to attempt to treat the fibres in the course of flame spraying one would unavoidably destroy the fiber structure. The claim language clearly is not one of intended use; instead, the language recites a characteristic of the sealing element, one which is not disclosed in the prior art.

For at least the foregoing reasons, Applicant respectfully submits that the subject matters of Claims 1-5, 7-8, 10-12, and 16-17 are not anticipated by *Beeck '218*, are therefore not unpatentable under 35 U.S.C. § 102, and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 102.

Rejection under 35 U.S.C. § 103(a)

In the Office Action, beginning at page 10, Claims 1-8, 10-12 and 16-17 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over *Beeck '218* in view of the disclosure of U.S. Patent No. 6,499,943, issued to *Beeck et al.* ("*Beeck '943*"). Applicant respectfully requests reconsideration of this rejection.

As noted above, *Beeck '218* qualifies as prior art against this application only under 35 U.S.C. § 102(e). *Beeck '943* was filed in the U.S. on 9 August 2000, yet was not granted until 31 December 2002, after the effective filing date of this application; accordingly, *Beeck '943* also only qualifies as prior art under 35 U.S.C. § 102(e).

This application, *Beeck '218*, and *Beeck '943* were, at the time the invention was made, owned by, or subject to an obligation of assignment to, the same entity.

Accordingly, under 35 U.S.C. § 103(c), *Beeck '218* and *Beeck '943* are not available as prior art against the claims of this application under 35 U.S.C. § 103(a). Accordingly, all of the rejections under section 103 in the Office Action are in error, because they all rely on one or both of these documents.

For at least the foregoing reasons, Applicant respectfully submits that the subject matters

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of Claims 1-12, 14, and 16-17, each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).

Conclusion

Applicant respectfully submits that the present patent application is in condition for allowance. An early indication of the allowability of this patent application is therefore respectfully solicited.

If the patent examiner believes that a telephone conference with the undersigned would expedite passage of this patent application to issue, they are invited to call on the number below.

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It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. If, however, additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is hereby authorized to charge fees necessitated by this paper, and to credit all refunds and overpayments, to our Deposit Account 50-2821.

Respectfully submitted,

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Date: 11 November 2005

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